

ABSTRACT

The thermal processing apparatus of the present invention includes: a processing container for containing an object to be processed; a plurality of heaters for heating the object to be processed; a plurality of temperature sensors for respectively detecting temperatures at a plurality of predetermined positions in the processing container; a storing part that stores: a thermal model for forecasting a temperature of the object to be processed contained in the processing container from outputs of the plurality of temperature sensors, and a recipe in which a desired temperature of the object to be processed is defined; and a controlling part that forecasts a temperature of the object to be processed by using the outputs of the plurality of temperature sensors and the thermal model, and that controls the plurality of heaters so as to cause the forecasted temperature of the object to be processed to coincide with the desired temperature of the object to be processed defined in the recipe. The thermal model is configured to forecast, from the outputs of the plurality of temperature sensors, not only a temperature of the object to be processed contained in the processing container but also a temperature of at least one other predetermined portion in the processing container. A desired temperature of the predetermined portion is also defined in the recipe. The controlling part is adapted to forecast a temperature of the object to be processed and a temperature of the predetermined portion by using the outputs of the plurality of temperature sensors and the thermal model, and to control the plurality of heaters so as to cause the forecasted temperature of the object to be processed and the forecasted temperature of the predetermined portion to respectively coincide with the desired temperature of the object to be processed and the desired temperature of the predetermined portion defined in the recipe.